

Remarks:

This responds to the Office Action of June 20, 2007 and is filed with a petition for three month extension of the period for response. Claims 50-69, 72, 74, 80-88 and 90-102 are pending in this application. Reexamination and reconsideration are respectfully requested.

Applicant amends independent claim 50 to recite, "forming a cap layer directly on the conductive layer, wherein the cap layer has a particular thickness to create destructive interference." This limitation finds support in the application at page 11, lines 9-11. Applicant amends independent claim 61 to recite "forming a cap layer ... disposed directly on the top surface of the protective layer, wherein said cap layer has a particular thickness to create destructive interference." Applicant amends independent claim 80 to recite "forming a cap layer ... situated directly on the first antireflective coating and having a particular thickness to create destructive interference." The amendments to claims 61 and 80 also find support at application page 11, lines 9-11.

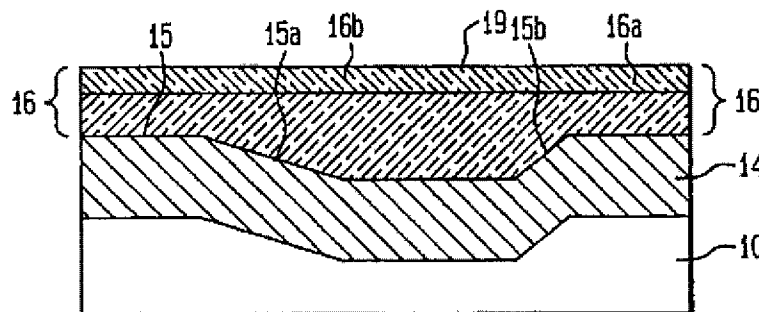
The Office Action rejected the prior pending claims as indefinite. Office Action ¶ 2. The above-discussed amendments do not use any terms that could be considered relative and so this rejection is addressed.

The Office Action rejected the prior pending claims as filing the written

description requirement. Office Action ¶ 3. The above amendments use the language stated in the application and meet all requirements of 35 U.S.C. § 112.

The Office Action rejected the pending claims over the Tobben patent taken in view of the JP 8-288285 application. The applicant's positions with respect to the prior art in the prior response are addressed in paragraph 8 of the Office Action. First, the Office Action states that on has a broader meaning than stated in applicant's remarks. Applicant addresses this aspect of the Office Action by restating the relationship between the cap layer and the conductive layer in claim 50 to "directly on." Applicant submits that "directly on" is not susceptible to the interpretation stated in the Office Action. Accordingly, the layer 16b illustrated in FIG. 2A of the Tobben patent, reproduced below, cannot meet the cap layer limitation of claim 50 because layer 16b is not "directly on" any conductive layer (including any portion of layer 14).

FIG. 2A



Similarly, layer 16b of the Tobben patent cannot be the "cap layer" of claim 61 because layer 16b is not "directly on" any protective layer. Finally, layer 16b of the Tobben patent cannot be the "cap layer" of claim 80 because layer 16b is not "directly on" any antireflective layer. Consequently, all of the pending claims distinguish over the Tobben patent, taken alone, and the Tobben patent taken in light of the other art of record.

Applicant notes that the large thickness variations of layer 16 of the cited Tobben reference cannot be considered to meet either the claim language, because the intentional, large thickness variations used for planarizing the substrate in the Tobben patent's method render the layer 16a or the combined layer of 16a and 16b to not have the recited particular thickness or the recited particular thickness that "create[s] destructive interference."

The entire purpose of the Tobben patent is to use the spin-on-glass planarization layer 16 to avoid using chemical mechanical polishing. Tobben patent, col. 2, lines 47-56, col. 1, lines 33-38. The non-uniform, varying thickness of layer 16 is apparent throughout the specification of the Tobben patent and its figures, including FIG. 2. It is the essential purpose of layer 16 that it have a non-uniform, varying thickness.

Planarization layer 16 cannot meet the "cap layer" limitation of the pending claims. For example, each of independent claims 50, 61 and 80 recites

that the cap layer has a "particular thickness" that "create[s] destructive interference." That is not true of planarization layer 16a of the Tobben patent or the combined layer 16a and 16b of the Tobben patent. As explained in the present application at page 11, destructive interference requires a particular thickness. Destructive interference is not produced by layers of widely varying thicknesses like planarization layer 16 of the Tobben patent.

Consequently, independent claims 50, 61 and 80 and their dependent claims distinguish over the Tobben patent taken alone or in combination with any of the art of record.

It would not have been obvious to modify the planarization layer 16 of the Tobben patent to produce the cap layer defined by the pending claims. This is because the varying thickness of the planarization layer 16 is the entire purpose of the planarization layer. As set out in the MPEP 2134.02, it is not obvious to modify a reference in a way that fundamentally changes the way that the reference operates. Consequently, it would not be obvious to alter the teachings of the Tobben patent in view of the '285 publication to product a structure that does not have a varying thickness planarization layer.

Rejections of Selected Dependent Claims

In the prior response, applicant explained that the subject matter of claim

60 was not disclosed, explicitly or implicitly, in the art of record. The current Office Action does not address the limitations of claim 60. The Office Action nevertheless indicates that claim 60 stands rejected. Applicant requests clarification that claim 60 is not rejected and presents allowable subject matter.

The Office Action asserts that the "subject matter of claims 53 and 63 is considered to be a characteristic of the disclosed deposition process." That is not true. The applicant brought this issue to the Examiner's attention in the prior response but the current Office Action repeats this statement. Applicant respectfully requests that the Examiner provide support for this position. There are implementations of HDPCVD that do not include a cap layer and instead use low etch to deposition ratios, at least at an initial stage of processing, to avoid damaging metal lines. There is no proper basis for rejecting claims 53 or 63 based on the art of record.

Similarly, claim 69 is directed to subject matter that is not "characteristic" of the HDPCVD process because HDPCVD processes were not performed that way prior to the teachings of the present application. Using a sufficiently low etch to deposition ratio, the metal lines do not need to be protected from the HPDCVD process. The applicant brought this issue to the Examiner's attention in the prior response but the current Office Action repeats this statement. Applicant respectfully requests that the Examiner provide support for this

position.

With respect to paragraph 6 of the Office Action, claims 56-58 and 87 recite cross sectional shapes of the remaining portions of the cap layers. The Office Action states in paragraph 6 that producing the recited shapes was conventional at the time of the invention. Applicant disagrees with this statement and requests identification of a reference to support this statement. Applicant directs the Examiner's attention to the present application page 13, which describes the advantages of the shaped cap layer for helping to tailor the HDPCVD process. Nothing in the art teaches or suggests the inventions of these claims.

In view of all of the above, the claims are believed to be allowable. Should the Examiner be of the opinion that a telephone conference would expedite the prosecution of this case, the Examiner is requested to contact applicant's attorney at the telephone number listed below.

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Amdt. Dated December 20, 2007
Reply to Office Action of June 20, 2007

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Customer No. 26021

If there are any fees due in connection with the filing of this response,
please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

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By: 

William H. Wright
Registration No. 36,312
Attorney for Applicants

1999 Avenue of the Stars, Suite 1400
Los Angeles, California 90067
Phone: 310-785-4600
Fax: 310-785-4601